

REMARKS

Claims 20-47 are pending in this application. Claims 1-19 have been withdrawn from consideration by the Examiner because of the restriction requirement. While Applicant continues to disagree with the restriction requirement, Applicant has canceled claims 1-19 solely in an effort to expedite prosecution.

Applicant has amended the claims as indicated above. Applicant has also added new claims 34-47. Support for the amendments to the claims and the new claims can be found in paragraph [0053] of the specification.

The Restriction Requirement

The Office has issued the restriction requirement set forth on pages 2-3. Applicant has canceled claims 1-19. Accordingly, this restriction requirement is moot.

35 U.S.C. §112

The Office has rejected claim 24 under 35 U.S.C. §112, paragraph 2, as having insufficient antecedent basis for the limitation of “RDL pattern.” Applicant thanks the Office for noting the lack of antecedent basis. Applicant has amended claim 24 and accordingly requests withdrawal of this rejection.

35 U.S.C. §102

The Office has rejected claims 20, 22-24, 26-28, and 32-33 under 35 U.S.C. §102(b) over Higgins (U.S. Patent No. 6294405) for the reasons noted on pages 4-6 of the Office Action. Applicant respectfully traverses this rejection.

Independent claims 20, 24, 32, and 33 contain the limitation that a redistributed line (RDL) pattern is formed, an insulating layer is formed on a portion of the RDL pattern, and a stud bump is formed directly on portion of the RDL pattern not covered by the insulating layer. Independent claim 34 contains the limitation that the stud bump is formed on RDL pattern without using an under bump metal. Independent claim 41 contains the limitation that the RDL pattern is a single-layer. As explained in paragraph [0053] of the specification, only using a single metal layer as the redistribution layer eliminates the need to use an under bump metal.

The Office has not shown that Higgins teaches or discloses these limitations recited in the claims. The Office argues that the rejected claims are clearly anticipated by the device depicted in Figure 1 of Higgins. Applicant respectfully disagrees. Figure 1 of Higgins describes a device containing contact pads 14, redistribution traces 16, under bump metallization (UBM) pads 15, and solder bumps 20.

But the Office has not shown that Higgins discloses a semiconductor package where the stud bumps are formed directly on the redistribution trace. Indeed, it would be difficult for the Office to argue that Higgins teaches or suggests such a limitation since the device in Figure 1 contains UBM pads 15 between the solder bumps 20 and the redistribution trace 16.

As well, the Office has not shown that Higgins discloses a semiconductor package where the stud bump is formed on an RDL pattern without using an under bump metallization. Again, it would be difficult for the Office to substantiate that Higgins teaches or suggest such a limitation since the device in Figure 1 contains UBM pads 15 between the solder bumps 20 and the redistribution trace 16. *See column 2, lines 28-49.*

Further, the Office has not shown that Higgins discloses a semiconductor package with a single-layer RDL pattern. Once again, it would be difficult for the Office to substantiate that

Higgins teaches or suggest such a limitation since the device in Figure 1 contains UBM pads 15 and redistribution traces 16—two layers—for redistributing the electrical signal from the contact pads 14 to the solder bumps 20.

Thus, the Office has not shown that Higgins teaches or suggests each and every limitation in the rejected claims. Accordingly, Applicant requests withdrawal of this ground of rejection.

35 U.S.C. §103

The Office has rejected claims 21, 25, and 29-31 under 35 U.S.C. §103 as being unpatentable over Higgins in view of Chakravorty (U.S. Patent No. 6350668) for the reasons noted on pages 7-9 of the Office Action. Applicant respectfully traverses this rejection.

As noted above, the independent claims contain one of the following three limitations. The first limitation is that a redistributed line (RDL) pattern is formed, an insulating layer is formed on a portion of the RDL pattern, and a stud bump is formed directly on portion of the RDL pattern not covered by the insulating layer. The second limitation is that the stud bump is formed on RDL pattern without using an under bump metal. The third limitation is that the RDL pattern is a single layer.

As noted above, the Office has not shown that Higgins teaches or discloses these limitations in the claims. And the Office has not argued—much less alleged—that Chakravorty teaches or suggests these limitations. Thus, the Office cannot substantiate that the combined teachings of these references suggest these limitations.

Indeed, it would be difficult for the Office to argue that Chakravorty teaches or suggests these limitations. Figures 3-9 show a semiconductor package containing UBM layer 310. And

the semiconductor package illustrated in Figures 10a through 10h does not contain a redistribution layer. *See column 13, lines 30-38.*

Thus, the Office has not shown that the combination of the cited references teaches or suggests each and every limitation in the rejected claims. Accordingly, Applicant requests withdrawal of this ground of rejection.

Comments

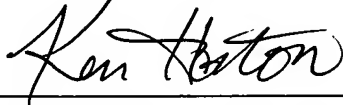
In concluding, the Office notes that Chakravorty, Wang et al., and Kim et al. could be used as references against the independent claims under 35 U.S.C. §102(e). If the Office later rejects the claims over these references, when it knew of them now, Applicant respectfully requests the term of any patent issuing from the present application be modified for the extra time necessary for Applicant to distinguish the claims over these references. Inferring that relevant prior art exists, and then not immediately applying them against the claims, does not expedite prosecution and prejudices the Applicant by reducing the term of any patent issuing from the present application.

CONCLUSION

For the above reasons, Applicant respectfully requests the Office to withdraw the above grounds of rejection and allow the pending claims.

If there is any fee due in connection with the filing of this Amendment, including a fee for any extension of time not accounted for above, please charge the fee to our Deposit Account No. 50-0843.

Respectfully Submitted,

By 
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